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ABSTRACT

Noting that computer instruction for teaching composition is generally limited to the component skills of spelling, punctuation, and grammar, this paper proposes a program that can help elementary school students use computers to generate ideas for descriptive writing. The first section of the paper provides orientation procedures designed to familiarize students with computer operations. The second section outlines three lessons that rely heavily on computer graphics as stimuli and describes the branching that occurs in response to students' input. The third section explains how lessons are terminated. (FL)

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COMPUTER INSTRUCTION ON GENERATING IDEAS FOR WRITING DESCRIPTION

Ann Humes

ABSTRACT

Appropriate computer instruction for elementary school students to teach generating ideas for writing description is presented. The initial orientation procedures are discussed. Then the mainline instruction and practice are outlined, and the corresponding branching for students' responses is described. Termination procedures are explained and the screen displays for these procedures are exemplified. A brief conclusion discusses the potential of the instruction.

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COMPUTER INSTRUCTION ON GENERATING IDEAS FOR WRITING DESCRIPTION

Ann Humes

Although great advances have been made in computer instruction for the content areas of math and science, courseware for teaching composition is generally limited to the component skills of writing, such as spelling and punctuation. Few programs have been designed to involve students in actual composing activities, yet a need exists for computer instruction that teaches the process of composing.

One of the elements of that process entails generating ideas for writing, and computers can help students master this composing activity. This paper presents appropriate computer instruction on generating ideas for a specific kind of discourse--description. Graphics are the stimulus for the discourse, so they are an essential feature of the program. They are specified here for display on a color monitor. However, these graphics would be enhanced by presenting them by videodisc or videotape if the instructional system has such capabilities.

To explain the design of the computer instruction for elementary school students, this paper first discusses the orientation procedures students undertake after they have loaded the program disk and the student data disk. It then outlines the mainline instruction and practice, describing the corresponding branching that occurs in response to students' input. The next section explains the procedures that terminate the program. This section is followed by a brief conclusion.

ORIENTATION PROCEDURES

At the beginning of the program, students proceed through two of three orientation procedures: the log on, introduction, and review. In the log-on procedure, students are presented first with a screen displaying the name of the developer, followed after an eight-second delay with the name of the program. When the student has used the program before, as determined by data found on the data disk, the computer branches to the review procedure. When the student has not used the program before, the computer branches to the introduction.

The first screen of the introduction, which comprises Section A of the first lesson, displays a request for students to type their first and last names; the computer files these names. The second screen explains the signal for input: the student's name followed by a question mark. It also provides brief practice by requesting that students type in their grade level in response to the signal for input. The next screen in the introduction explains how to stop the program when the computer is waiting for input.

In the review procedure, a screen displays a review of procedures for controlling the program--when to respond, when to push return, and how to exit if the student wishes to exit before the program terminates the lesson. The next display reviews the questions students are taught to use when they generate ideas for writing description (see Table 1). After this review, the computer branches students to their appropriate re-entry point in the lesson.

INSTRUCTION AND PRACTICE

After orientation, the student is presented with the first instruction. Instruction is comprised of three lessons. Lessons 1 and 2 have four sections; Lesson 3 has five sections.

Lesson 1

Section A of Lesson 1 consists of the introduction to the program, as described above. In Section B, the first screen displays an animated picture of popcorn popping, and the second displays a closeup of individual kernels of popcorn. One of these two pictures appears on the screen throughout Section B, depending on which picture is more closely relevant to the text on the screen.

The computer then asks each generating question (see Table 1), and the student generates and types in relevant descriptors as answers to the questions. The computer poses one question per frame so that students' responses can be recorded and evaluated.

Table 1

GENERATING QUESTIONS ASKED ABOUT POPCORN

1. What does it look like?
2. What does it sound like?
3. What does it smell like?
4. What does it feel like?
5. What does it taste like?

Each generating question is accompanied by graphic cues that students learn to associate with the corresponding question:

look: eye
sound: ear
smell: nose
feel: hand
taste: mouth

If students respond, the computer files the response(s), branches to the Say-More Procedure (see Table 2), and subsequently branches back to the mainline instruction after matching for appropriate descriptors programmed into computer memory. If students do not respond or do not push the return key after their input, the computer branches to the Answer Procedure (see Table 3) and subsequently branches according to students' response to that procedure.

Table 2

SAY-MORE PROCEDURE

Try to type more words.
<*first name*>
When you are finished, please push the RETURN key.

---> Appropriate cue graphic (i.e., eye, ear, nose, hand, mouth).

When RETURN is pushed, the computer matches words from here, as well as words typed immediately before branching to this procedure, for appropriate set of sensory words, adjusting for spelling errors.*

If looks, then white, puffy, like snowflakes.
If sounds, then pop, like rain hitting the roof, like fireworks going off.
If smells, then greasy, delicious.
If feels, then feathery, rough, as light as air, warm.
If tastes, then salty, crunchy, buttery.

If one or more of these words is not matched, unmatched items from appropriate computer list above are displayed in the following frame:

Here <*are some other words/is another word*> that tell(s) <*what popcorn looks like/how popcorn sounds/how popcorn smells/how popcorn feels/how popcorn tastes*>:

<*words*>

Please push RETURN.

When RETURN is pushed, computer categorizes and files student's words with spelling corrected for matches and any prompted words so that they can be printed in separate lists: student's and computer's. Then computer branches back to next frame in Lesson 1: Section B.

*Spelling errors include doubled/non-doubled letters; transposed letters; one missing letter; one extra letter; one wrong letter; inappropriately capitalized words.

Table 3

ANSWER PROCEDURE

I am waiting for your answer. <*first name*>? Press RETURN when you are finished.	———> Appropriate clue graphic. If the student types in a response, the computer branches to the Say-More Procedure. If the student does not type in one or more words within 30 seconds, the computer displays the following: Here are some words that tell <*question to be answered*> <*words*>: Press RETURN. Computer then displays the list of words that answer the question: how popcorn looks: white, puffy, like snowflakes how popcorn sounds: pop, like rain hitting the roof, like fireworks going off how popcorn smells: greasy, delicious how popcorn feels: feathery, rough, as light as air, warm how popcorn tastes: salty, crunchy, buttery The computer files these words as part of the computer's response to the question and then branches back to next frame in Lesson 1: Section B.

The last two screens in this section display the descriptors that students generate as input for the questions asked on previous screens.

In Section C, students are presented with a picture of bacon and the picture cues for the five senses. Students are then asked to type in the questions that they can use to generate ideas for describing bacon. The computer requests one question per frame so that students' responses can be recorded and evaluated. The graphic cue for each generating question disappears when the student types in the corresponding question. After student input, the computer matches for the words look, sound, smell, feel, taste. If there is a match, the computer branches to the Words Procedure (see Table 4) and subsequently branches back to the main-line instruction. If there is no match or no response, the computer branches to the Assistance Procedure (see Table 5), and subsequently branches to Words Procedure. When students have asked all the questions and generated descriptors as answers to those questions, the computer displays all the generated ideas. The corresponding graphic cues are aligned with the ideas.

In Section D, students select the food they wish to describe, popcorn or bacon. Then the computer displays all the descriptors generated to describe that food. Students obtain a printed copy of the display by pushing P. If a student does not select a topic for composing a description, the computer selects one for him/her. Students then compose their descriptions offline, on regular paper.

Lesson 2

In Section A of Lesson 2, the computer explains that all the sensory questions cannot be posed and answered for many objects the writer may

Table 4

WORDS PROCEDURE

A. Now type all the words you can think of that tell <*appropriate question*>, <*first name*>? <*clue graphic*>

Please push RETURN when you are finished.

--->

Computer displays this frame with whichever of the clues and following inserts is appropriate:

LESSON 1:

bacon: what bacon looks like, how bacon sounds when it is cooking, how bacon smells, how bacon feels when you pick it up, how bacon tastes.

LESSON 2:

rose: what a rose looks like, how a rose smells, how a rose feels when you touch it.

trumpet: what a trumpet looks like, what a trumpet sounds like, what a trumpet feels like when you touch it.

orange: what an orange looks like, what an orange smells like, what an orange feels like when you touch it, what an orange tastes like.

LESSON 3:

dupla: about the shape, size, and color of dupla.

If the student types one or more words, the computer displays the following on the screen with words student has typed:

B. Can you say more, <*first name*>? (clue graphic)

When you are finished, push RETURN.

When RETURNED is pushed, student's words are filed for later printing. Then the computer branches as follows:

bacon: to frame 2, Section C, Lesson 1, unless this is last sensory match. If last sensory match, computer branches to frame 3.

rose: to frame 6, Section A, Lesson 2, unless this is the last sensory match. If last sensory match, computer branches to next section.

trumpet: to frame 3, Section B Lesson 2, unless this is the last sensory match. If last sensory match, computer branches to next section.

orange: to frame 3, Section C, Lesson 2, unless this is the last sensory match. If last sensory match, computer branches to next section.

dupla: to frame 3, Section B, Lesson 3, unless this is the last sensory match. If last sensory match, computer branches to next section.

If the student does not type one or more words, the computer displays the following [see the list of words below, for list of questions, see A above]:

B1 Here is a way to tell <*appropriate question*>:
<*word*>

The computer then files computer's word and branches as described above.

bacon

looks: striped
sounds: sizzling
smells: smoky
feels: greasy
tastes: salty

rose

looks: white
smells: like perfume
feels: velvety

trumpet

looks: shiny
sounds: brassy
feels: cold

orange

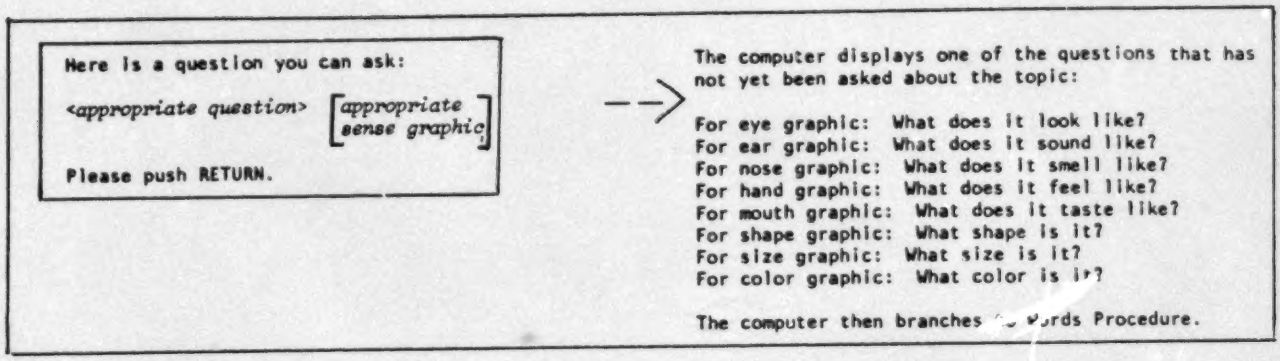
looks: dimpled
smells: tangy
feels: sticky
tastes: sweet

dupla (fantasy figure 2)

shape: like an ice cream cone
size: large
color: orange

Table 5

ASSISTANCE PROCEDURE


Here is a question you can ask:
<appropriate question> [appropriate sense graphic]
Please push RETURN.
The computer displays one of the questions that has not yet been asked about the topic:
For eye graphic: What does it look like?
For ear graphic: What does it sound like?
For nose graphic: What does it smell like?
For hand graphic: What does it feel like?
For mouth graphic: What does it taste like?
For shape graphic: What shape is it?
For size graphic: What size is it?
For color graphic: What color is it?
The computer then branches to Words Procedure.

wish to describe. To demonstrate the inappropriateness of some questions, a rose is displayed as the object to be described while graphics dramatize the inappropriate nature of some sensory questions (e.g., a person "tasting" a rose).

The computer then elicits input from students on the questions that can be appropriately posed for a rose. The computer evaluates students' responses and branches when the answer is appropriate, as described for Section C in Lesson 1 above. If there is no match or no response, the computer branches to the Prompting Procedure (see Table 6).

In Section B, students input questions that are appropriate to ask when they are generating content for describing a trumpet. As in Section A of this Lesson, the computer evaluates students' responses and branches appropriately to either the Words Procedure or the Prompting Procedure. The instructional procedures are the same for Section C, which presents an orange as the object to be described.

Table 6

PROMPTING PROCEDURE

Here is a clue to a question you can ask: /picture: eye/ear/nose/hand/mouth/ <*first name*>?	Computer displays an appropriate clue graphic. If this is the first question for the topic, the computer displays first graphic in sequence. If this is not the first question, the computer displays the first graphic in sequence for which a question has not been asked: rose: eye, nose, hand trumpet: eye, ear, hand orange: eye, nose, hand, mouth fantasy figure 2: shape, size, color If the student types in a response, the computer matches for any of the appropriate questions not previously matched. If there is a match, the computer branches to the Words Procedure. If there is no match, or if the student does not respond, the computer branches to the Assistance Procedure.

In Section D, a review of the questions to ask when generating ideas for descriptions is displayed, along with the corresponding graphics cues. The students again select a topic (either a rose, a trumpet, or an orange) to describe offline, and the computer provides a hard copy of the descriptors that students have generated.

Lesson 3

In Section A, students are presented with a fantasy figure (see Figure 1), and computer explains that sometimes the only appropriate generating question is "What does it look like?" The computer then presents specific "subquestions" students can ask when they generate details about how something looks:

What size is it?

What shape is it?

What color is it?

Corresponding graphics cues are displayed. Each cue consists of two figures that are identical except for one feature:

Cues	Figures
size	one figure is larger than the other
shape	one figure is thinner than the other
color	the members of the pair differ only in color

The computer then asks each size, shape, color question, and students generate ideas in response to the question. The computer matches students' input for appropriate descriptors in the program's memory. A descriptor is provided if the student does not generate any appropriate responses.

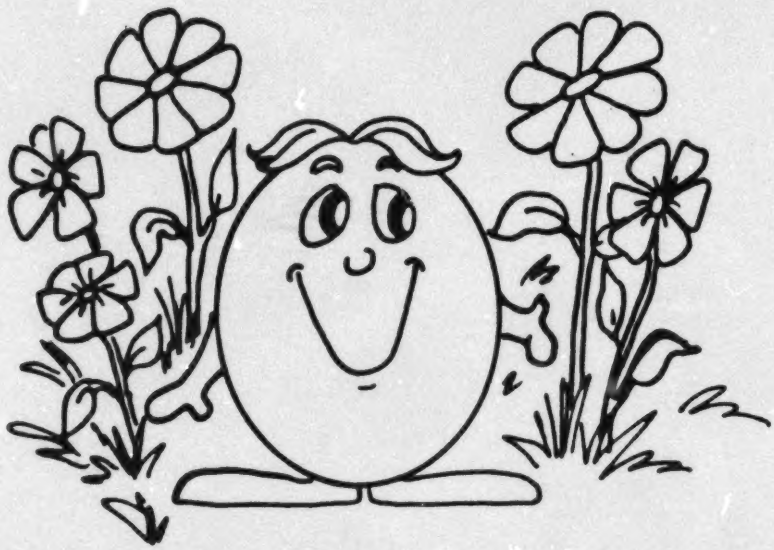


Figure 1: First Fantasy Figure in Instruction

In Section B, the student is presented with two versions of another fantasy figure (see Figure 2). One is a complete figure; the other is a collapsed outline of the same figure. The latter figure becomes the right size, shape, and color as the student inputs the corresponding question. When the student types in an appropriate generating question, the computer matches for the words "size," "shape," and "color." When a match is found, the computer branches to the Words Procedure to elicit appropriate descriptors. When there is either no match or no response, the computer branches to the Assistance Procedure. This process is repeated until the student has typed in all three questions about size, shape, and color.

In Section C, students are taught a further refinement of the size, shape, and color questions. A rabbit is displayed and students learn to ask about the size, shape, and color of its parts (e.g., "What shape are its parts?"). The computer then has the student generate ideas for describing the size, shape and color of those parts, and responses are evaluated for matches with appropriate descriptors programmed in memory. If the student does not input appropriate descriptors, the computer provides a single descriptor; providing more than one descriptor might encourage students to let the computer do all the generating.

In Section D, students are presented with a spider and asked to identify the parts that can be described in terms of their shapes. The computer then evaluates students' responses. If there is neither a match nor a response, the computer provides the information. Then students are presented with a review screen displaying descriptors of the size, shape, and color of the objects presented in Lesson 3. Students choose their topic for composing offline, as described for Lessons 1 and 2.

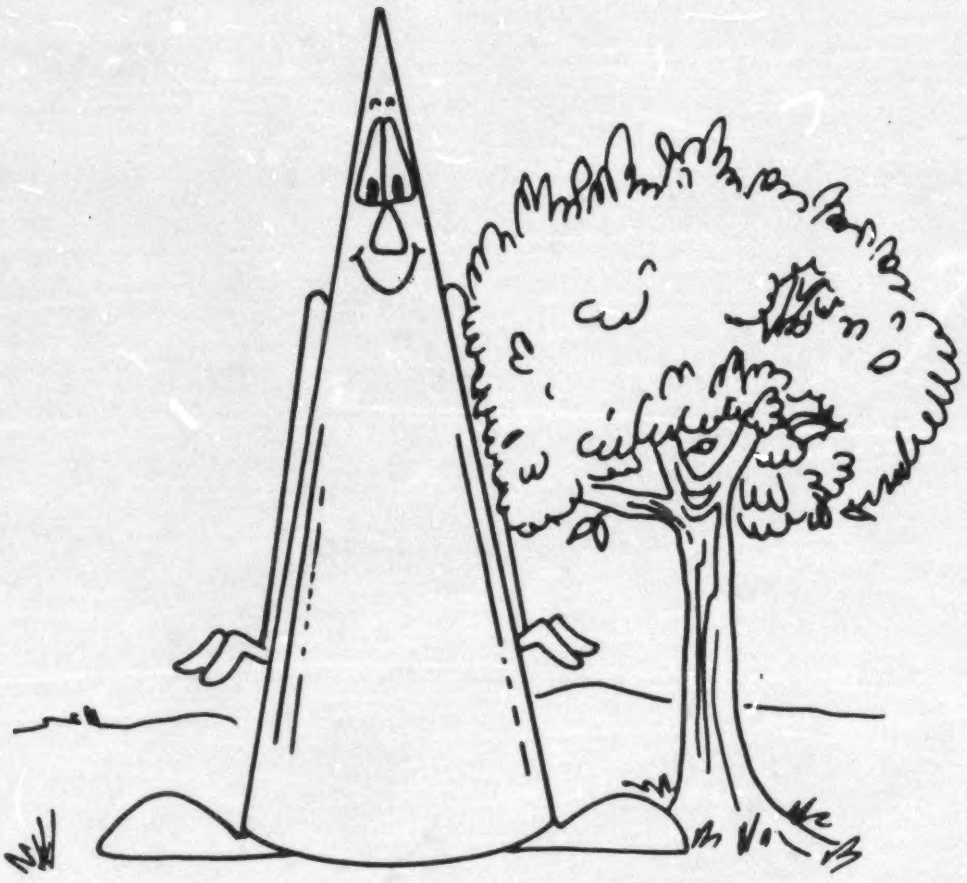


Figure 2: Second Fantasy Figure in Instruction

TERMINATION PROCEDURES

The program can be terminated for several reasons and in several ways. If the student's operating time on the computer is close to 20 minutes, the computer, at the point where it is about to begin a new topic, displays the following screen:

> That is enough for now. We will talk another time about getting ideas for writing descriptions. Goodbye, <*first name*>.

The computer then files all the student's work during the operating time and logs the student off the computer.

If the student types BYE at any time when the computer is waiting for input, the computer responds with the following screen:

> Goodbye, <*first name*>. We will work later on getting ideas for description.

As before, the computer files the student's work during the operating time and logs the student off the computer.

At any point where the student responds to a command/question but does not push the return key within 30 seconds after the response, the computer displays the following screen:

> If you have finished, please push the RETURN key.
> If you do not, I must say goodbye.

If the student pushes the return key within 15 seconds, the computer branches back to the point where the student was in the lesson before this termination procedure. If the student does not push the return

key within 15 seconds, the computer replaces the above frame with the following frame:

I'm sorry. Goodbye, <*first name*>.

The computer then terminates the lesson, filing work student has completed at that time.

CONCLUSION

The paper has described instruction for teaching students how to generate ideas for writing descriptions. It has also presented specifications for branching procedures that provide the potential for a highly interactive program. Furthermore, computer programming for the instruction and branching procedures is feasible, even within current memory limitations, particularly if videotape or videodisc is used to display graphics. Given sufficient user interest and sufficient resources, this instructional design could become a viable and valuable component of a larger instructional package for teaching the composing process.